Technical Data Sheet

Category 6 Unshielded HD Patch Leads

28AWG U/UTP

Product Description

HellermannTyton's Cat6 High Density patch leads are designed for high-performance networking in 1-Gigabit Ethernet applications, supporting frequencies from 1 to 250 MHz. Manufactured to meet and exceed ISO/IEC 11801, ANSI/TIA-568.2-D, and EN 50173 standards, they ensure superior signal integrity and compliance with structured cabling requirements.

These patch leads are optimise for high-density patching, with an ultra-slim 3.8mm outer diameter that reduces congestion and improves airflow in network cabinets lowering patch lead density by up to 25% in a standard 1U 24-port patch panel.

Design Limitations

Cat6 28AWG patch leads offer advantages in high-density environments due to their reduced diameter, but they also introduce certain network design and usage limitations compared to standard 24AWG patch leads. The key difference lies in their electrical properties, particularly higher insertion loss (signal attenuation) due to the thinner conductor size.

The smaller 28AWG conductors have higher resistance per unit length, leading to greater signal loss compared to 24AWG cables.

To compensate for this increased attenuation, shorter maximum cable lengths must be observed in network designs.

HellermannTyton recommends reducing the Permanent link to 83m where 10m of 28AWG patch leads are used(5m + 5m), creating a maximum channel link of 93m. For Channels using 15m (7.5m + 7.5m) of 28AWG patch leads a maximum permanent link distance of 78m should be used, giving a maximum channel length of 93m.

Where PoE applications are required installations should implement bundle size and separation protocols as outlined in ISO/IEC TS 29125, CENELEC EN 50174-99-1 or TIA TSB-184-A.

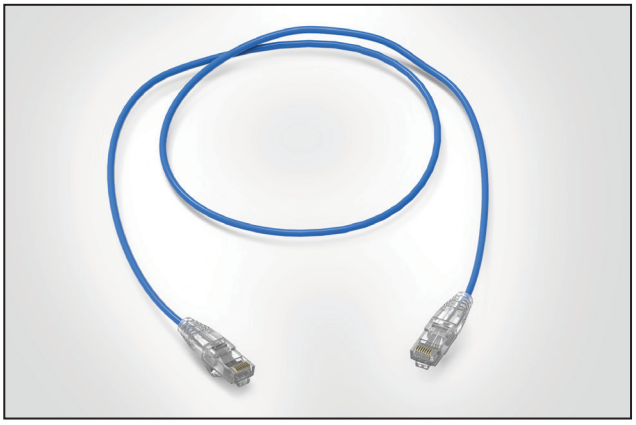
Design Specification Document

High-Density Patch leads shall meet or exceed the electrical transmission performance requirements for links and channels as defined in: EN 50173-1 (Class E), ISO/IEC 11801-1 (Class E), ANSI/TIA-568.2-D (Category 6).

The patch leads shall be manufactured by HellermannTyton and constructed from 28 AWG, unshielded U/UTP, twisted pair, stranded conductor with a standard 8-position modular RJ45 plug and transparent snag-free strain relief boots on both ends.

Plug contacts shall be plated with a minimum of 50 micron (µ) of gold for reliable connectivity. Patch leads shall have a nominal outer diameter (OD) of 3.8mm to support high-density patching applications.

The patch leads shall be available in Blue, Green and White to support identification.



Category 6 Unshielded HD Patch Leads.

Applications

- Enterprise / Premise Cabling
- Data Centre Cabling
- Telecoms
- Data, Voice & Video
- High-speed Networks
- Environments with EMI/RFI

Features & Benefits

- **1-Gigabit Performance:** Supports high-speed data transmission at frequencies from 1 to 250 MHz.
- **Compact Design:** Slim 3.8mm outer diameter reduces cable bulk and improves airflow.
- **High-Density Patching:** Reduces patch lead density by up to 25%in standard 1U 24-port patch panels.
- **Standards Compliance:** Meets or exceeds ISO/IEC 11801, ANSI/TIA-568.2-D, and EN 50173 requirements.
- **Future-Proof Investment:** Complies with industry standards, ensuring compatibility with modern and evolving network infrastructures.

Technical Data Sheet

Electrical and Performance Specifications

Specifications	Value
Cable Type	Cat6a (U/UTP)
Conductor Size	28AWG (stranded Copper)
Frequency Rating	Up to 250 MHz
Maximum Data Rate	1Gbps
Nominal Outer Diameter (OD)	3.8mm (±0.2mm)
Plug Type	RJ45, 50µ" Gold-Plated Contacts
Wire Configuration	4-Pair Twisted
Wiring Standard	T568B as standard, custom configurations available upon requests
Insulation Material	LSZH

PoE Power Delivery

PoE Standard Support	IEEE 802.3af (PoE), 802.3at (PoE+)
Maximum Power	Up to 30W (PoE Type 3) with bundle size limitations
DC Resistance	~23.2Ω per 100m
Temperature Rise Considerations	Requires reduced bundle size and spacing for high-power PoE

Mechanical Properties

Parameter	Value
Bend Radius	4x Cable Diameter (15.2mm)
Flexibility	High, suitable for tight spaces
Insertion Force	<20N (stand RJ45 Plug)
Retirement Life	>785 Insertions

Maximum Channel Length Adjustments

Patch Lead Type	Patch Lead Length	Permanent Link Length	Total Channel Length
24AWG Patch Leads	*10m (5m each end)*	*90m*	*100m (standard)*
28AWG Patch Leads	10m (5m each end)	83m	93m
	15m (7.5m each end)	78m	

Part Numbers

Length (m)	GREEN		BLUE		WHITE	
	UNS	Part Code	UNS	Part Code	UNS	Part Code
0.2	851-16510	RJ45SPC6-0.20M/GN	851-16506	RJ45SPC6-0.20M/BL	851-16515	RJ45SPC6-0.20M/WH
0.3	851-16511	RJ45SPC6-0.30M/GN	851-16507	RJ45SPC6-0.30M/BL	851-16516	RJ45SPC6-0.30M/WH
0.5	851-16512	RJ45SPC6-0.50M/GN	851-16508	RJ45SPC6-0.50M/BL	851-16517	RJ45SPC6-0.50M/WH
1	851-16343	RJ45SPC6-01.0M/GN	851-16338	RJ45SPC6-01.0M/BL	851-16318	RJ45SPC6-01.0M/WH
2	851-16344	RJ45SPC6-02.0M/GN	851-16339	RJ45SPC6-02.0M/BL	851-16319	RJ45SPC6-02.0M/WH
3	851-16345	RJ45SPC6A03.0M/GN	851-16340	RJ45SPC6-03.0M/BL	851-16320	RJ45SPC6-03.0M/WH
5	851-16346	RJ45SPC6-05.0M/GN	851-16341	RJ45SPC6-05.0M/BL	851-16321	RJ45SPC6-05.0M/WH
7	851-16514	RJ45SPC6-07.0M/GN	851-16509	RJ45SPC6-07.0M/BL	851-16519	RJ45SPC6-07.0M/WH
10	851-16347	RJ45SPC6-10.0M/GN	851-16342	RJ45SPC6-10.0M/BL	851-16322	RJ45SPC6-10.0M/WH

HellermannTyton Data Ltd
Waterside House, Edgar Mobbs Way
Northampton NN5 5JE
United Kingdom
Tel.: +44 1604 707 420